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EXAMINER

ROBINSON, KEITH O NEAL

ART UNIT PAPER NUMBER

1638

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/778,018

Applicant(s)

MARTIN ET AL.

Examiner

Keith O. Robinson, Ph.D.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 23-36 is/are pending in the application.
- 4a) Of the above claim(s) 4-21, 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 25-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/15/06; 9/5/06; 9/19/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action mailed March 3, 2006 and the following **second non-final** Office Action is set forth.

The amendments of claims 1-3, the withdrawal of claims 4-21, 23 and 24, the cancellation of claim 22 and the addition of claims 25-36, filed September 5, 2006, have been received and entered in full. In addition, the amendments to the specification and the declaration of Dr. Anne Dorrance, filed September 5, 2006, have been received and entered in full.

2. Claims 1-3 and 25-36 are under examination.

Response to Arguments

3. Applicant's amendment to claim 3 has overcome the 35 USC 112, second paragraph rejection of the Office Action mailed March 3, 2006 (see 'Amendment to the claims' filed September 5, 2006). The rejection of claim 3 has been withdrawn.

4. Applicant's arguments, see 'Remarks' filed September 5, 2006, page 12, 3rd paragraph to page 19, end of 2nd paragraph, coupled with the declaration of Dr. Dorrance, filed September 5, 2006 with respect to the 35 USC 112, first paragraph enablement rejection of claims 1-3 on pages 3-6 of the Office Action mailed March 3, 2006, have been fully considered and are persuasive. The rejection has been withdrawn.

5. Applicant's arguments, see 'Remarks' filed September 5, 2006, page 20, 1st – 3rd paragraphs, with respect to the 35 USC 102 rejection of claims 1-3 on pages 6-7 of the

Office Action mailed March 3, 2006, have been fully considered and are persuasive.
The rejection has been withdrawn.

Claim Rejections - 35 USC § 103

6. Claim 3 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Demirbas et al (Crop Sci. 41: 1220-1227, 2001), in view of Cregan et al (Crop Sci. 39: 1464-1490, 1999). The rejection is repeated for the reasons of record as set forth in the Office Action mailed March 3, 2006 (see pages 7-9). Applicant's arguments, filed September 5, 2006, have been fully considered but they are not persuasive.

Applicant argues that the rejection is based on improper hindsight (see page 20, 5th paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The teachings of Demirbas et al of SSR markers linked to genes associated with *Phytophthora* resistance combined with the teachings of Cregan et al of SSR markers and genes associated with *Phytophthora* resistance on linkage F would have motivated one of ordinary skill in the art to make the claimed invention.

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Applicant argues that there is no teaching, motivation or suggestion to combine the cited teachings to find a new *P. sojae* resistance locus on linkage group F (see page 21, 2nd paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. As stated in the previous Office Action mailed March 3, 2006, pages 8-9, one of ordinary skill in the art would have been motivated to combine these teachings because Cregan et al teach genes associated with *Phytophthora* resistance are located on linkage group F and Demirbas et al teach a method for determining *Phytophthora* resistance in soybean using molecular markers. One of ordinary skill in the art would be able to use these teachings to screen soybean populations with markers from linkage group F to determine which, if any, were polymorphic and then use those markers to determine which, if any, are associated with *Phytophthora* resistance.

Applicant argues that their method shows an association of the marker with a new phenotype (see page 21, 2nd paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. The claimed invention is a method for using marker-assisted selection using markers to determine the presence of Rps8, which confers resistance to *Phytophthora*. *Phytophthora* resistance is not a new phenotype as evident by the teaching of Demirbas et al. In addition, Demirbas et al teach a method of using marker-assisted selection using markers to determine *Phytophthora* resistance in soybean and understand that markers associated with linkage group F could be used.

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Applicant argues that Demirbas established that other *Phytophthora* resistance loci are located on linkage groups N, J, F and G (see page 21, 3rd paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. One of ordinary skill in the art would have been motivated to use markers associated with linkage group F because as stated in the previous Office Action mailed March 3, 2006 Cregan et al teach that Rps3, a gene associated with *Phytophthora* resistance is on linkage group F (see page 8, 4th paragraph).

Applicant argues that Demirbas et al concluded that neither Satt114 nor Satt374 displayed any significant linkage to Rps3 (see 21, last paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. The Examiner did not find such evidence as stated by Applicant.

Applicant argues that upon reading Demirbas et al and Cregan et al, one of ordinary skill would not find motivation to combine the teachings and even if the teachings were combined the combination would not produce the instant invention (see page 22, 2nd paragraph of 'Remarks' filed September 5, 2006).

This is not persuasive. In the previous Office Action mailed March 3, 2006, the Examiner has provided reasons why one of ordinary skill in the art would combine the teachings to produce the claimed invention (see pages 7-9).

New Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3 and 25-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hegstad et al (Crop Sci. 38: 50-55, 1998), in view of Cregan et al (Crop Sci. 39: 1464-1490, 1999).

The claims read on a method for determining the presence of trait locus Rps8 in a soybean wherein trait locus Rps8 maps to soybean major linkage group F and is associated with soybean resistance to *Phytophthora sojae* pathotypes vir1a, 1b, 1c, 1d, 1k, 2, 3a, 3b, 3c, 4, 5, 6, and 7, comprising analyzing genomic DNA from the soybean for the presence of at least two molecular markers associated with trait locus Rps8 whereby detecting the presence of the molecular markers provides an indication that trait locus Rps8 is present in the soybean. As the presence of trait locus Rps8 is associated with soybean resistance to *Phytophthora sojae*, the claimed method is

interpreted as a marker-assisted selection method for determining *Phytophthora sojae* resistance in soybean.

Hegstad et al teach a method for determining the presence of trait loci in soybean associated with soybean resistance to *Phytophthora sojae* resistance, comprising analyzing genomic DNA from the soybean for the presence of at least two molecular markers associated with soybean resistance to *Phytophthora sojae* whereby detecting the presence of the molecular markers provides an indication that trait loci in soybean associated with soybean resistance to *Phytophthora sojae* resistance is present in the soybean (see 'Materials and Methods', pages 51-52). Hegstad et al also teach various pathotypes (see page 51, Table 1).

Hegstad et al do not teach the presence of trait locus Rps8 in a soybean wherein trait locus Rps8 maps to soybean major linkage group F and is associated with soybean resistance to *Phytophthora sojae* pathotypes vir1a, 1b, 1c, 1d, 1k, 2, 3a, 3b, 3c, 4, 5, 6, and 7 or Satt516, Satt595, Satt114, Satt334, Sat_317, Sat_197, Satt510, Satt335 and Satt144.

Cregan et al teach markers Satt516, Satt595, Satt114, Satt334, Satt510, Satt335 and Satt144 on linkage group F (see page 1477, Figure 1). In addition, Cregan et al teach RFLP markers, K644 and A757, associated with linkage group F and Hegstad et al teach that these RFLP markers are associated with soybean resistance to *Phytophthora sojae* (see page 53, Table 2, and page 54, 1st column, lines 2-4).

Hegstad et al also teach, "[i]t is possible that additional *Rps* alleles are present which could not be detected with the current set of *Rps* probes [and some soybean

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lines] were assigned a *Rps*? allele because of unique RFLP banding patterns... that differed from isolines with known *Rps* alleles" (see page 54, 2nd column, 5th paragraph). In addition, Hegstad et al teach, "[t]he resistance exhibited may be due to an unknown allele at the *Rps3* locus, or to a unique *Rps* gene [and some soybean lines] had [a] type of reaction pattern [that] suggests either presence of a multigene interaction, or that the resistance exhibited is due to novel *Rps* allele(s) (see page 54, 2nd column, 6th paragraph to page 55, 1st column, end of 1st paragraph).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the teachings of Hegstad et al with those of Cregan et al to produce a method for determining the presence of trait loci in soybean associated with soybean resistance to *Phytophthora sojae* resistance.

One of ordinary skill in the art would have been motivated to combine these teachings because of the teachings of Hegstad et al regarding resistance due to an unknown allele at the *Rps3* locus, or to a unique *Rps* gene as discussed above, in addition to the fact that Cregan et al teach SSR markers associated with linkage group F as well as the RFLP markers, K644 and A757, that Hegstad et al taught were associated with soybean resistance to *Phytophthora sojae*, as discussed above.

In addition, one of ordinary skill in the art would have reasonable expectation of success based on the success of Hegstad et al in producing a method for determining the presence of trait loci in soybean associated with soybean resistance to *Phytophthora sojae* resistance using molecular markers.

Conclusion

10. No claims are allowed.
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith O. Robinson, Ph.D. whose telephone number is 571-272-2918. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keith O. Robinson, Ph.D.

November 8, 2006

DAVID H. KRUSE, PH.D.
PRIMARY EXAMINER

